APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/849,833	05/04/2001	Eric D. Brill	M61.12-0346	3936

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EXAMINER
SKED, MATTHEW J

ART UNIT	PAPER NUMBER
2655	

DATE MAILED: 01/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
     closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-17</u> is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-17</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>05/04/01</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a)☐ All   b)☐ Some * c)☐ None of:

     1.☐ Certified copies of the priority documents have been received.

     2.☐ Certified copies of the priority documents have been received in Application No. _____.

     3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
          application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)   4)☒ Interview Summary (PTO-413)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)   Paper No(s)/Mail Date. <u>10/12/04</u> .
3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)   5)☐ Notice of Informal Patent Application (PTO-152)
     Paper No(s)/Mail Date _____.   6)☐ Other: _____.

DETAILED ACTION

Response to Arguments

1.   The rejection to claims 6 and 7 under 35 U.S.C. § 112 have been withdrawn in

view of the amendments to the claims. The objection to claim 3 has also been

withdrawn.

2.   Applicant's arguments with respect to claims 1-17 have been considered but are

moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

4.   Claims 1, 5, 8, 10, 15 and 16 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Baker (U.S. Pat 6,122,613).

As per claims 1 and 8, Baker teaches a method of training a translation device

comprising:

generating a first meaning set from a first speech signal using a first natural

language unit (offline recognizer generates likely candidates from the input speech, col.

8, lines 20-24);

generating a second meaning set from a second speech signal using a second

natural language unit (real-time recognizer generates likely candidates from the input

speech, col. 8, lines 20-24);

comparing the first meaning set to a second meaning set and generating a score

(combiner generates a combined score between real-time recognizer's candidates and

the offline recognizer's candidates, col. 8, lines 39-50); and

using this score to determine how to modify the first natural language unit (offline

transcriptionist uses the scores to correct recognition errors and these corrections are

used to train or adapt the offline recognizer or the real-time recognizer, col. 8, lines 57-

60 and col. 9, lines 18-23).

Baker does not teach generating the meaning sets from corpora.

However, the Examiner takes Official Notice that using natural langue units to

analyze text are notoriously well known in the art. Therefore, it would have been

obvious to one of ordinary skill in the art at the time of invention to modify the system of

Baker to generate the two meaning sets from text instead of speech signals because

text requires less space in memory hence it would speed up processing for the system.

5.   As per claims 5 and 10, the "specification" is taken to mean the model that is

being trained within the natural language unit.

Baker teaches changing the specification of one component of the natural

language unit (adapts or trains the speech models, col. 9, lines 18-21).

Baker does not teach comparing the calculating a new score based on the changed model and generating a third meaning set from the first corpus and the new model.

However the Examiner takes Official Notice that recursive training is notoriously well known in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Baker to generate a third meaning set from the first corpus and new model because it would allow the change in the corpus to be used as a means to evaluate the change in the processing unit and hence facilitate training.

6.   As per claim 15, Baker teaches changing at least two natural language units (offline transcriptionist uses the scores to correct recognition errors and these corrections are used to train or adapt the offline recognizer and the real-time recognizer, col. 8, lines 57-60 and col. 9, lines 18-23).

7.   As per claim 16, Baker teaches a method of training a translation device comprising:

generating a first meaning set from a first speech signal using a first natural language unit (offline recognizer generates likely candidates from the input speech, col. 8, lines 20-24);

generating a second meaning set from a second speech signal using a second natural language unit (real-time recognizer generates likely candidates from the input speech, col. 8, lines 20-24);

comparing the first meaning set to a second meaning set and generating a score (combiner generates a combined score between real-time recognizer's candidates and the offline recognizer's candidates, col. 8, lines 39-50); and

using this score to determine how to modify the first natural language unit (offline transcriptionist uses the scores to correct recognition errors and these corrections are used to train or adapt the offline recognizer or the real-time recognizer, col. 8, lines 57-60 and col. 9, lines 18-23).

Baker does not teach generating action sets.

However, the Examiner takes Official Notice that using natural language units to analyze commands are notoriously well known in the art. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Berger to generate first action sets instead of meaning sets from the first and second corpora because it would allow the newly generated characters to be interpreted by another system.

Baker does not teach generating the action sets from corpora.

However, the Examiner takes Official Notice that using natural langue units to analyze text are notoriously well known in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Baker to generate the two action sets from text instead of speech signals because text requires less space in memory hence it would speed up processing for the system.

8.   Claims 2-4, 6, 7, 9, 12 and 17 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Baker in view of Berger et al. (U.S. Pat. 6,304,841).

As per claims 2, 9 and 17, Baker does not teach the first corpus written in a first

language and a second corpus written in a second language.

Berger teaches a method for training a natural language unit using two corpora,

the first corpus written in a first language and a second corpus written in a second

language (col. 13, lines 1-3). Note: These references are combinable because they

both teach methods for training natural language units.

It would have been obvious to one of ordinary skill in the art at the time of

invention to modify the system of Baker so that the first corpus written in a first language

and a second corpus written in a second language as taught by Berger because it

would enable the system to train the recognizers to translate speech from one language

to another hence expanding the capabilities of the system.

9.   As per claim 3, Baker teaches aligning the data tables generated from each

recognizer to match corresponding speech units (col. 10, lines 29-32).

10.   As per claim 4, Baker teaches performing semantic interpretation of each speech

unit to produce the meaning set (generates sets of likely candidates for each speech

unit hence it must determine the unit's meaning, col. 8, lines 20-24).

Baker does not teach performing a syntactic parse on the first corpus to produce

a set of syntactic parses.

Berger teaches parsing the first corpus and interpreting the parsed corpus (col.

13, lines 11-15, col. 6, lines 22-26, and tables 3a and 4a). By looking at table 3a the

text must have been parsed and interpreted in order to make the connections between the first and second languages.

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Baker to perform a syntactic parse as taught by Berger because it would separate the corpus into manageable segments so that semantic interpretation is performed more easily.

11.   As per claim 6, Baker does not teach comparing the score to the second score and modifying the first natural language unit based on the difference between the score and the second score to produce a modified natural language unit.

Berger teaches comparing the new scores (identify highest measure of merit, col. 14, lines 42-46) and modifying the model on this comparison (calculate new values of parameters, col. 14, lines 46-49).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Baker to compare the new scores and modify the model on this comparison as taught by Berger because this would determine if the initial modification was performed correctly, hence providing better training.

12.   As per claims 7 and 11, Baker does not teach generating a fourth meaning set from the first corpus using the modified natural language unit, comparing the fourth meaning set to the second meaning set to determine a third score and using the third score to further modify the natural language unit.

Berger teaches repeating the training process many times including making a plurality of changes to the model (iterative scaling, col. 14, lines 26-56).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Baker to repeat the training process again as taught by Berger because it would allow the system to be further trained until the results reach an acceptable level, hence providing better training.

13.   As per claim 12, Baker does not teach making a permanent change to the model from one of the plurality of changes.

Berger teaches making a permanent change to the model from one of the plurality of changes. Specifically Berger teaches stopping the training process after certain values fall below specified thresholds (col. 14, lines 53-56). Therefore the training would stop and the last change to the model is the permanent change.

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Baker to make a permanent change to the model from one of the plurality of changes as taught by Berger because it would enable the natural language unit's model that has the best results to be sustained hence the system will have minimum error.

14.   Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baker in view of Berger and in view of Luo et al. (U.S. Pub. 9,737,259).

Baker and Baker do not teach that changing the natural language unit is changing a parser.

Luo teaches changing (training) a statistical parser with a corpus of annotated sentences (para. 13, lines 1-2).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Baker and Berger to change the parser when changing the natural language unit because training the parser would allow it to adapt more easily to newly acquired data.

15.   Baker teaches that changing the natural language unit is changing a semantic interpreter (adapts and trains the speech models and these speech models perform a semantic interpretation of the meaning of the input, col. 9, lines 18-21).

Conclusion

16.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hsu et al. (U.S. Pat. 5,677,991) and Bijl et al. (U.S. Pat. 6,173,259) teach systems of training multiple speech recognizers. Turney (U.S. Pat. 6,470,307), Witschel (U.S. Pat. Pub. 2001/0051868A1), and Brown et al. (U.S. Pat. 5,768,603) teach methods of training linguistic systems.
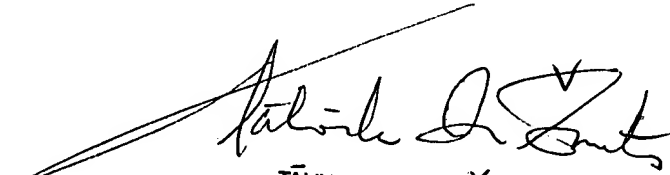
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew J Sked whose telephone number is (703) 305-8663. The examiner can normally be reached on Mon-Fri (8:00 am - 4:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Talivaldis Smits can be reached on (703) 306-3011. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

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you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

MS
01/19/05

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PRIMARY EXAMINER